

**REMARKS**

Applicants would like to thank the Examiner for careful consideration of the pending application. Claims 1-11 are pending in the application. Claims 1-11 have been amended. The Abstract has been amended. Support for all amendments can be found in the specification as originally filed. No new matter has been added.

**Objection to the Abstract**

The Abstract stands objected to for the inclusion of legal phraseology. Applicants have amended the Abstract to attend to the Examiner's objection. Reconsideration of the Examiner's objection is respectfully requested.

**Objections to Claims**

Claims 1-11 stand objected to for reasons below recited in the order in which they appear in the Office Action.

- a) The Examiner has objected to "inconsistent terminology" in Claims 1-11.
- b) The Examiner has objected to the use "vapour".

Claims 1-11 have been amended to attend to the Examiner's objections. Reconsideration of the Examiner's rejections is respectfully requested.

**Rejections under 35 USC 112**

Claims 1-11 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants have amended the claims and addressed the Examiner's rejections below in the order in which they appear in the Office Action.

- a) In Claims 1-8, the term "characterized in that" has been replaced.
- b) Claim 1 has been amended to recite active steps.
- c) Claim 1 has been amended to remove the term "of this type".
- d) Claims 6 and 7 have been amended to remove the term "in particular".

- e) Claim 9 has been amended to remove the term "fine".
- f) The term "desired isomer" has been replaced in Claim 9.
- g) Claim 11 has been amended.
- i) Claims 4, 8 and 10 have been amended to distinguish which components constitute the bottom and overhead products of the claimed rectification process.

Accordingly, Applicants have attended to the Examiner's rejections under 35 USC 112 and respectfully request reconsideration and withdrawal of the Examiner's rejections.

#### Rejections under 35 USC 103

Claims 1-7, 9, and 10-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,800,002 to Chikatsu et al. (hereinafter "Chikatsu") or U.S. Patent No. 4,292,142 to Berg and U.S. Patent No. 6,478,965 to Holtzapple et al. (hereinafter "Holtzapple") in view of U.S. Patent No. 3,847,755 to Chanel et al. (hereinafter "Chanel").

It is well settled that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification does not have a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the Claims. *In re Wilson*, 165 USPQ 494, 496, (CCPA 1970).

The Examiner states that Chikatsu, Berg and Holtzapple disclose processes for extractive rectification using phosphoric esters and/or phosphine oxides and concedes that each of these references fail to teach or suggest using phosphoric esters and/or

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phosphine oxides for the separation of m- and p-dichlorobenzene. The Examiner suggests that it would be obvious to one skilled in the art to substitute the process of Chanel for the separation of dichlorobenzene mixtures containing m- and p-dichlorobenzenes with any of the above identified references to arrive at the Applicants' claimed invention.

Applicants respectfully disagree. First and foremost, there is no motivation for one skilled in the art to combine the teachings of Chikatsu, Berg and Holtzapple with those of Chanel. Applicants submit that the selection of an extracting agent for the extractive rectification for a particular compound is not inconsequential as there is a great deal of variability in the art. Hence, a skilled artisan would not assume that an extracting agent suited for a particular system is also suited for another. As noted by Chanel, "the selection of the class of extractive solvents depends strongly on the compounds to be separated and is quite unobvious," and "the man skilled in the art has no precise rule which allows him to make a selection a priority." Chikatsu describes a process for the extraction of conjugated diene, Berg describes a process for the separation of ethyl benzene, and Holtzapple describes a process for the concentration of dilute solutions of fermentation salts. Chikatsu, Berg and Holtzapple fail to describe, teach or suggest that their extracting agents are suitable for the separation of m- and p-dichlorobenzene. Therefore, these references fail to provide motivation to one skilled in the art to combine their teachings with those of Chanel to arrive at the process of amended independent Claims 1, 10, and 11.

Furthermore, one skilled in the art would have no expectation of successfully combining the processes, solvents, and extracting agents of Chikatsu, Berg and/or Holtzapple with those of Chanel to separate m- and p- dichlorobenzene and, to attempt to do so, would require undue experimentation on the part of the artisan. As discussed herein above, there is a great deal of variability in the art regarding the selection of an extracting agent for a particular compound. Therefore, one skilled in the art would not expect an extracting agent specifically used for the extraction of conjugated diene (Chikatsu), the separation of ethyl benzene (Berg) or the concentration of dilute

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solutions of fermentation salts (Holtzapple) to successfully mediate the separation of m- and p-dichlorobenzene.

Moreover, Chikatsu and Berg fail to describe, teach or suggest the use of phosphoric esters, phosphine oxides and mixtures thereof as extracting agents as recited in amended independent Claims 1, 10, and 11. In particular, Chikatsu describes phosphoric acid ester as a polymerization inhibiting additive to an extraction solvent such as CAN, NMP, DMF, or DMAC (col. 1, lines 47-68), and Berg describes the use tributyl phosphate in combination with more than one other organic compound, specifically maleic anhydride, phthalic anhydride, benzoic acid and salicylic acid. Therefore, Chikatsu and Berg fail to describe, teach or suggest the use of phosphoric esters, phosphine oxides or mixtures thereof as primary extracting agents and fail to provide sufficient disclosure that would motivate one skilled in the art to use them as such.

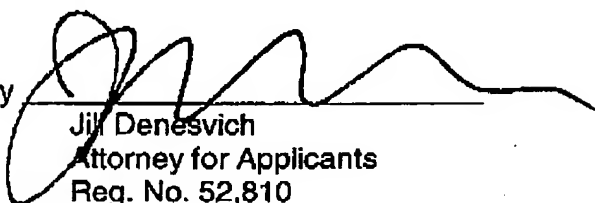
Additionally, Holtzapple describes the use of phosphine oxides that are outside of the scope of amended independent Claims 1, 10, and 11. In particular, the phosphine oxides of Holtzapple necessarily have a high enough molecular weight to make them immiscible in water (col. 3, lines 42-43). The phosphine oxides of amended independent Claims 1, 10 and 11 are of relatively low molecular weight,  $R^1$ ,  $R^2$  and  $R^3$  are "at least 3 to not more than 12 C atoms", and are not immiscible in water. Therefore, Holtzapple fails to describe the phosphine oxides of amended independent Claims 1, 10 and 11 and fails to provide adequate disclosure to motivate one skilled in the art to modify the described phosphine oxides to arrive at the phosphine oxides of amended Claims 1, 10 and 11. Accordingly, the Examiner has failed to make a *prima facie* case for obviousness. Applicants respectfully request reconsideration of the Examiner's rejections of amended independent Claims 1, 10 and 11.

Amended Claims 2-9 either directly or indirectly depend from and add further limitation to amended independent Claim 1 and are deemed allowable for at least the same reasons in connection with amended independent Claim 1.

Applicants respectfully request reconsideration of the Examiner's rejections of claims 2-9.

In view of the above amendments, it is believed that pending Claims 1-11 are in condition for allowance and notice to such effect is respectfully requested. Should the Examiner have any questions regarding this application, the Examiner is invited to initiate a telephone conference with the undersigned.

Respectfully submitted,

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